RADAR IMAGES OF THE KUIPER QUADRANGLE (MERCURY) FROM GOLDSTONE RADAR DATA. R. F. Jurgens,[1] F. Rojas[1, 2], M. A. Slade,[1] E. M. Standish[1], and A. F. C. Haldemann,[1] [1]JPL/Caltech, Mail Stop 238-420, Pasadena, CA 91109-8099 (jurgens@planets.jpl.nasa.gov), [2]University of Arizona, Tucson, AZ 85719.

We have assembled all currently processed radar data from 1989 to 1998 into crude images covering the Kuiper (H6) region on Mercury. The data used were taken to support the ephemeris improvement and gravitational physics programs; however, the resolution is good enough in some cases to make north/south ambiguous images that show some features that can be identified with the Mariner 10 features. Topography profiles along the apparent equator are also available; some of these profiles show ridges and rills as well as crater depths and diameters. The combination of the optical imaging and the radar imaging can be helpful in understanding similar features in radar images of the optically unimaged hemisphere. The images are centered on the following locations:

Observation DOY_YR	year	mm	dd	UT (sec)	Long (deg)	Lat (deg)
084_92	1992	03	24	59022.1	5.05	-7.87
202_98	1998	07	21	76859.7	9.67	8.63
091_96	1996	03	31	68396.9	10.28	-3.20
085_92	1992	03	25	59682.7	12.08	-7.83
206_93	1993	07	25	60647.7	21.43	10.04
255_90	1990	09	12	76924.6	21.79	8.79
220_97	1997	08	09	92890.2	22.37	8.81
205_98b	1998	07	24	75868.6	26.23	9.25
207_93	1993	07	26	56185.9	27.21	9.84
192_94	1994	07	11	63856.4	34.09	8.46
178_95	1995	06	27	55992.6	44.68	6.57
148_97	1997	05	28	76514.3	59.65	2.52
142_89	1989	05	22	72291.0	65.60	2.98
105_96	1996	04	15	80809.8	69.54	-2.59
184_95	1995	07	03	49514.2	75.05	6.17
264_90	1990	09	21	79570.1	77.42	6.04

The observations are labeled by Day-Of-Year and year, calendar date, the UT center-time in seconds, along with the latitude and longitude of the sub-radar center point. Each observation can potentially span about 10 degrees around the sub-radar point. However, in practice the coverage is limited by the signal to noise ratio which depends strongly upon the distance of the planet at the time of observation.

As these observations were not made for imaging purposes, the pixels are not square except for a small region roughly 1.5 degrees from the sub-radar point. For that reason, regions further back (where the range rings are roughly 2.3 km wide) appear to be smeared in the E-W direction. The E-W resolution is approximately 16 km but varies somewhat depending upon the apparent spin rate of the planet. The N-S resolution increases as distance increases from the sub-radar point reaching approximately 4.5 km at 5 degrees from the sub-radar point.

Some of the best images clearly show craters, linear features, and apparent shifts of a few kilometers in the E-W altimetry. Most of these features can be identified with structures seen in the Mariner 10 imaging, others remain somewhat mysterious or perhaps confused by the N-S ambiguity.